WHAT IS CLAIMED IS:

1. An X-ray computed tomography apparatus, comprising:

an X-ray source that radiates an X-ray to an object;

an X-ray detection device that converts the X-ray passing through the object into X-ray detection image data;

at least one X-ray shield located between a focal point of the X-ray source and the X-ray detection device;

control means for performing control so as to relatively move the X-ray source and the object;

scattered line removing means for calculating a scattered X-ray data component corresponding to a scattered X-ray component from X-ray detection image data corresponding to a region in which a first-order X-ray is shielded by the X-ray shield and calculating a first-order X-ray image data obtained by removing the scattered X-ray component from the X-ray detection image data;

complementing means for calculating complemented image data from the first-order X-ray image data by complementing a part of the first-order X-ray image data corresponding to the region in which the first-order X-ray is shielded; and

rearranging means for rearranging an image by

reversely projecting the complement image data,

wherein the complementing means complements the part of the first-order X-ray image data obtained by shielding the first-order X-ray, corresponding to an X-ray path connecting the focal point of the X-ray source with the X-ray shield by using another part of the first-order X-ray image data obtained by the first-order X-ray in non-shield state, corresponding to an X-ray path in a 180-degree opposite direction to the X-ray path connecting the focal point of the X-ray source with the X-ray shield.

2. An X-ray computed tomography apparatus according to claim 1, wherein the X-ray shields are asymmetrically arranged with respect to a plane including the focal point of the X-ray source and a rotation axis about which the object and the X-ray source are relatively rotated.

3. An X-ray computed tomography apparatus according to claim 1, wherein the X-ray shield is located between the X-ray source and the object.

4. An X-ray computed tomography apparatus according to claim 1, wherein the X-ray detection device includes pixels arranged in two-dimensional matrix.

5. An X-ray computed tomography apparatus according to claim 1, wherein the relative movement between the X-ray source and the object is a helical movement.

6. An X-ray computed tomography apparatus according to claim 1, wherein when the X-ray path in the 180-degree opposite direction is not existent, the complementing means complements the process image based on image data obtained by converting an X-ray radiated along an X-ray path closest to the X-ray path in the 180-degree opposite direction.